PREVENTING DISEASE AROUND THE GLOBE

THE NATIONAL IMMUNIZATION PROGRAM is committed to working with partners to improve health in the United States and globally. We work closely with both established and new global partners to provide immunization expertise for global childhood immunization programs. We are committed to making polio eradication a reality, to pursuing efforts to eliminate or better control measles and rubella, and to helping developing countries use vaccines to control and prevent vaccine-preventable diseases.

FOR MOST VACCINE-PREVENTABLE DISEASES, no country is ever truly free of a disease until all countries are free. Working together, the countries of the world wiped smallpox off the face of the earth. The Centers for Disease Control and Prevention continues to lead collaborative efforts to protect every person in every country from vaccine-preventable diseases.

WORKING GLOBALLY TO STRENGTHEN ROUTINE IMMUNIZATION SERVICES

Approximately 2.2 million people die each year as a result of diseases that could have been prevented with currently available vaccines.* Vaccines that are now in the late stages of development or have been recently introduced in industrialized countries, such as the pneumococcal conjugate vaccine, could prevent almost two million additional deaths. CDC is therefore committed to improving access to sustainable and safe immunization services. Together with international partners, NIP is working to strengthen routine immunization activities, to reduce illness and death caused by vaccine-preventable diseases, and to build a strong platform for the introduction of new vaccines in the developing world.

In 2005, CDC continued to work with international partners at the regional and national levels to provide technical assistance to strengthen immunization programs, to improve health information systems and use of data, and to promote alignment with polio eradication and measles mortality reduction strategies. In addition, NIP collaborated with both the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) in the development of their joint worldwide plan for immunization through 2015, the Global Immunization Vision and Strategies.

GLOBAL ALLIANCE FOR VACCINES AND IMMUNIZATION

CDC WORKS CLOSELY WITH THE GLOBAL ALLIANCE for Vaccines and Immunization (GAVI). This network of international partners was established to help the poorest countries strengthen childhood immunization programs, introduce new and under-utilized vaccines, improve injection safety in immunization programs, and fund research into the development of new vaccines. Through the generosity of partners such as the Bill and Melinda Gates Foundation, the vaccine fund currently is capitalized at more than $1 billion, with more than 60 countries receiving GAVI funding support.

*WHO, 2003

From 2001–2003, CDC served as the Technical Institute Representative on the GAVI Board. NIP staff continue to play an active role on GAVI's Monitoring and Evaluation Task Force. In this arena, NIP has provided technical support at the global, regional, sub-regional, and national levels in the implementation and evaluation of GAVI-related activities. Since January 2005, NIP has had a representative on the GAVI Working Group. This group develops and prepares working papers for the GAVI Board and helps set the direction of future GAVI activities. In addition, the Working Group sets the agenda for the bi-annual GAVI Board meetings as well as GAVI's Partners meeting.

Other partners of GAVI include WHO, UNICEF, the World Bank Group, the International Federation of Pharmaceutical Manufacturers Association, other public health and research institutions, and national governments.

THE GAVI MISSION

GAVI works to protect children of all nations and of all socio-economic levels against vaccine-preventable diseases.

GAVI has established six objectives to fulfill this mission:

- Improve access to sustainable immunization services.
- Expand the use of all existing safe and cost-effective vaccines and promote delivery of other appropriate interventions at immunization contacts.
- Support the national and international accelerated disease-control targets for vaccine-preventable diseases.
- Accelerate the development and introduction of new vaccines and technologies.
- Accelerate research and development efforts for vaccines needed primarily in developing countries.
- Make immunization coverage a center of international development efforts.

In 2002, working with other centers at CDC, NIP developed and published the strategic document, *Global Immunization, 2002–2006: An Overarching Strategy for CDC*. This document complements the current CDC global health strategy document, *Working with Partners to Improve Global Health: A Strategy for CDC and ATSDR* (published in September 2000) by providing specific information about CDC's health strategy for global immunization.

THE GAVI/HIB INITIATIVE: TAKING ACTION TO PREVENT CHILDHOOD PNEUMONIA AND MENINGITIS

The mission of the GAVI/Hib Initiative is to expedite and sustain evidence-informed decisions at the global, regional and country levels regarding the use of Hib vaccination to prevent childhood meningitis and pneumonia.

The GAVI/Hib Initiative supports eligible countries in making informed decisions regarding the introduction or sustainability of Hib vaccine programs. This initiative is a collaboration between the Johns Hopkins Bloomberg School of Public Health, the London School of Hygiene and Tropical Medicine, CDC, and WHO and is funded by GAVI. The Hib

Initiative will build on ongoing activities that are relevant to Hib disease in the eligible countries and will work collaboratively with various partners to achieve the initiative's goal of reducing death and disability caused by meningitis and pneumonia.

In June 2005, the Hib Initiative was introduced at a WHO new-vaccines retreat in Geneva. In September and October, representatives of the Hib initiative visited WHO Regional offices in Europe, Africa, Southeast Asia, Western Pacific and the Middle East to discuss regional priorities and to select key countries for conducting on-site assessment of Hib vaccine issues. The first consultations with selected countries were conducted in Burkina Faso, Ukraine and Kyrgyzstan in November. The following month, the initiative was officially launched at a GAVI partners meeting in New Delhi, and in January 2006, the Hib Initiative held a retreat in Geneva to review the evolving environment of Hib immunization. This included new funding opportunities through GAVI, an evolving vaccine supply, and the new recommendation from the Strategic Advisory Group of Experts (SAGE).

The Hib Initiative is currently developing its strategic plan in collaboration with GAVI partners for submission to its management committee Spring 2006. The plan will focus on three main strategic directions: communication, coordination and research, and will focus its priorities by geographic areas with different levels of vaccine implementation. An extensive consultation process is underway that includes country visits, regional forums on Hib disease prevention, and coordination with other vaccine initiatives.

GLOBAL DISEASE DETECTION INITIATIVE

CDC and WHO conduct effective surveillance and laboratory confirmation for polio and measles on a global scale. These networks provide a platform on which to build sustainable surveillance and laboratory capacity for emerging infectious disease threats. In 2005, NIP's Global Immunization Division, together with the National Center for Infectious Diseases and WHO, began the Global Disease Detection Initiative. The purpose is to build capacity for high quality disease surveillance and to expand lab capacity to detect and confirm outbreaks from other diseases of global importance in Bangladesh, China, and India, which together represent over 2.5 billion people.

Based on input from host countries on disease surveillance and laboratory priorities, implementation of encephalitis and meningitis outbreak detection in high priority sites in the three countries were selected as targets for 2006. As CDC and WHO gain experience in-country with the management of these systems, this surveillance paradigm could be expanded to include additional countries and other syndromes in the future.

POLIO ERADICATION

SINCE THE WORLD HEALTH ASSEMBLY resolved to eradicate poliomyelitis globally, global polio eradication efforts have been very successful. Of the three types of wild polioviruses, *type 2 was last seen in 1999 and appears to have been eradicated.* Today, more than 200 countries and territories are certified polio-free, and the disease is now endemic in just four countries in South Asia and Africa. While

progress was made in 2005 in Egypt, India, Pakistan, Afghanistan, and Niger, poliovirus was imported into Indonesia, Yemen, Somalia, Angola, Ethiopia, Nepal, Sudan, Chad, Mali, Eritrea, and Cameroon as a result of suboptimal immunization activities. During 2005, reported confirmed cases of paralytic polio numbered 1,936,* compared to 1,255 reported cases in 2004. The 2005 figure represents a *case decline of more than 99%* since the World Health Assembly launched the global initiative to eradicate polio in 1988. Many challenges remain, however, as we strive to achieve and certify the eradication of polio.

**WHO data as of February 28, 2006*

Polio data for 2005 is provisional because cases are sometime reported as long as two months after onset of paralysis. Visit ***www.polioeradication.org*** *for the latest polio statistics.*

SIGNIFICANT ACHIEVEMENTS IN POLIO ERADICATION

Vaccine Delivery

During 2005, CDC contributed more than 400 million doses of oral polio vaccine (OPV) through cooperative agreements with UNICEF and the United Nations Foundation to eradicate polio.

Supplemental Immunization Activities (SIAs)

Every country with endemic or recently endemic polio conducts supplemental immunization activities (SIAs) such as national or sub-national immunization days. During these activities, every child younger than five years of age receives two doses of oral polio vaccine, one month apart, regardless of prior immunization status. In 2005, an estimated 390 million children in 47 countries were reached as part of these efforts. Several endemic countries held multiple SIAs during the year. Nearly two billion doses of oral polio vaccine were delivered during SIAs in 2005.

Stop Transmission of Polio (STOP) Teams

Public health professionals are sent to host countries at the request of their Ministries of Health to support polio and measles surveillance as well as the planning, implementation, and evaluation of national immunization days. Since January 1999, over 675 STOP team members have participated in three-month assignments in 47 countries. This includes 37 NIP staff members who have participated on STOP teams, providing more than 3,300 person days in immunization activities, polio and measles surveillance, staff training, advocacy, and data management. This initiative has significantly enhanced each host nation's Expanded Programme on Immunization.

Surveillance

CDC and the Global Polio Eradication Initiative partners have intensified active surveillance for acute flaccid paralysis (rapid onset of floppy paralysis of arms and legs) and polio. In 2005, CDC helped conduct surveillance reviews in Bhutan, India, the Philippines, and South Sudan. In addition, CDC staff provided technical assistance to strengthen surveillance in other countries in Asia and Africa.

Laboratory Support

CDC assists WHO in building global polio and measles laboratory networks and serves as a WHO Global Specialized Reference Laboratory for polio. Reference laboratories are highly qualified laboratories that receive specimens from other laboratories for confirmation and also provide assistance with difficult specimens. To date, 145 laboratories are in the global polio network.

POLIO

SUCCESS

STORY

India & Egypt

India and Egypt are two polio-endemic countries in which the government and partners achieved high polio vaccination coverage by 2004. However, due to factors such as dense population, poor sanitation, and high birth rates in some areas, polio virus continued to be transmitted efficiently in five reservoir areas in these countries. In September 2004, the WHO Advisory Committee on Polio Eradication (ACPE) recommended using an old tool in the war on polio: a monovalent oral polio vaccine (mOPV) that has superior immunogenicity for the type of poliovirus circulating in the reservoir areas compared with the trivalent OPV that has been used to eradicate polio elsewhere.

Monovalent OPV was rapidly licensed for use in India and Egypt and was used in mass vaccination campaigns in the five reservoir areas from April to June 2005. Preliminary data provided very encouraging results: mOPV use appears to have stopped transmission of Type-1 poliovirus (P1) in three of five reservoirs and substantially reduced P1 transmission in the other two reservoirs.

mOPV

In October 2005, based on this success, the ACPE recommended that mOPV use should immediately be expanded to interrupt transmission in all areas with circulating polioviruses.

Partnerships

Collaboration among international partners continues to expand. This collaboration is unique among public health initiatives in its unprecedented level of joint activity, scale of private sector contributions, and funds raised. Rotary International alone projects a contribution of more than $600 million (U.S. dollars) by 2005. The partners include CDC, Rotary International, UNICEF, WHO, the U.S. Agency for International Development, Japan, Great Britain, Germany, Canada, Denmark, Australia, the Netherlands, the Task Force for Child Survival and Development, the United Nations Foundation, the Bill and Melinda Gates Foundation, World Bank, the International Federation of Red Cross and Red Crescent Societies, Aventis Pasteur/IFPMA, and other international agencies.

Activities that have worked so well in reducing and eliminating polio will continue. These activities include:

- Accelerating immunization activities and intensifying surveillance in all polio-endemic countries, particularly those affected by war or civil unrest
- Supporting coordinated, planned strategies for polio eradication based on strong routine immunization programs, National Immunization Days, acute flaccid paralysis surveillance, and "mopping-up" immunization
- Supporting the STOP Program to ensure that a cadre of trained public health professionals works in high-priority countries to accelerate polio eradication, accelerate measles mortality reduction and regional elimination, and improve disease data management
- Continuing research and developing consensus for how to achieve polio eradication, post-eradication immunization policy and support for laboratory containment of the polio virus
- Moving forward with the certification process for countries that are polio-free but not yet certified
- Seeking the additional financial and human resources to fully implement the WHO-recommended strategies for polio eradication in Africa and Asia
- Providing more than 2300 person days to support polio eradication in the field in 2005 (not including CDC STOP volunteers)

MEASLES MORTALITY REDUCTION AND REGIONAL ELIMINATION EFFORTS

MEASLES IS NO LONGER ENDEMIC in the United States. This means that all of the cases now seen in our country were either documented or believed to have been brought in from other countries. The number of cases in the Western Hemisphere has been reduced by more than 99% from approximately 250,000 cases in 1990 to 75 cases in 2005.* And measles importations in the United States from Latin America have also dropped from 230 cases in 1990 to no cases during 2000–2004.

However, measles remains rampant in other parts of the world. In 2003, measles was responsible for an estimated 530,000 deaths in developing countries, and it was *the leading cause of vaccine-preventable death for children under 5 years of age.* CDC, in partnership with WHO, UNICEF, the American Red Cross, and the United Nations Foundation, agrees that there is an urgent need to accelerate global measles control.

**Pan American Health Organization, December 31, 2005*

TOP: ***Chad*** — *NIP's Robert Perry watches a measles vaccination post*

CENTER: ***Bangladesh*** — *Meredith McMorrow with surveillance officers on measles training*

BOTTOM: ***Angola*** — *Polio immunization day*

MEASLES INITIATIVE CONTINUES

The American Red Cross, CDC, the United Nations Foundation, the World Health Organization, and the United Nations Children's Fund continue to support the Measles Initiative, a five-year program to control measles deaths in Africa by vaccinating 200 million children in 36 sub-Saharan countries by 2005. While most Americans barely remember measles, this disease kills many thousands of children worldwide annually, an estimated 216,000 in Africa alone. This fact makes measles the single leading vaccine-preventable cause of death among children in Africa, yet it can be easily prevented with a simple vaccination. To date, more than 200 million children have been vaccinated in more than 40 countries, preventing an estimated 1.2 million measles deaths. For more information about the Measles Initiative, visit *www.measlesinitiative.com.*

ACHIEVEMENTS IN MEASLES REDUCTION AND ELIMINATION

Partnership

CDC has played a leading role in establishing a new partnership to champion measles control efforts and prevent the annual measles deaths still occurring worldwide. The partnership includes WHO, UNICEF, the American Red Cross, the United Nations Foundation, and the International Federation of the Red Cross and Red Crescent Societies. In five years, the partnership immunized more than 200 million children and prevented an estimated 1.2 million measles deaths, reducing measles mortality in sub-Saharan Africa by 60% from 1999–2004.

Strategies

A three-pronged strategy has been responsible for many successes in global measles reduction, such as the dramatic drop in measles cases in the Western Hemisphere and the elimination of endemic measles in the United States. The strategy consists of the following approaches:

- Supplementary immunization activities to rapidly increase population immunity against measles (a "second opportunity" for measles immunization)
- High routine coverage with at least one dose of measles vaccine
- Integrated epidemiologic and laboratory surveillance

SUPPORT

During 2005, CDC supported measles mortality reduction in the African Region–AFRO (Chad, Comoros, Cote d'Ivoire, Equatorial Guinea, Kenya, Mozambique, Nigeria, and South Africa), the Eastern Mediterranean Region–EMRO (Egypt, North and South Sudan, and Somalia), the Southeast Asia Region–SEARO (India, Bangladesh, and Indonesia), and the Western Pacific Region–WPRO (China, Japan, Pacific Island Countries, and Philippines). In addition, CDC supported regional measles elimination activities in the Region of the Americas (Argentina, Columbia, Guatemala, Mexico, and Peru) and the European Region–EURO (Azerbaijan, Kazakhstan, Kyrgyzstan, Romania, Tajikistan, and Turkey).

SIGNIFICANT ACCOMPLISHMENTS

During 2005, only 75 measles cases were confirmed in the Western Hemisphere compared to 2,572 confirmed cases in 2002.* The majority of these cases were imported from measles-endemic countries outside the Western Hemisphere. No sustained measles transmission has been reported in the Americas since November 2002. In fiscal year 2005, CDC contributed approximately $42 million in grants and other scientific and technical assistance to control measles globally, as compared with a contribution of approximately $28 million in fiscal year 2002.

CONTINUING COMMITMENT TO MEASLES REDUCTION AND ELIMINATION

Measles activities will continue, moving toward the reduction and elimination of another deadly vaccine-preventable disease and improving health and quality of life for people everywhere.

These activities include:

- Supporting accelerated measles control by focusing efforts in priority countries in each WHO region:
  - For AFRO: Angola, Chad, Kenya, and Nigeria for technical assistance for campaigns and strengthening of surveillance, and all countries in the Central Block
  - For SEARO: India and Indonesia
  - For WPRO: China, Japan, Pacific Islands (Including U.S.-affiliated Pacific jurisdictions)
  - For EURO: Russian Federation, Western Europe
  - For EMRO: Sudan
- Eliminating measles, rubella, and congenital rubella syndrome in the Western Hemisphere, in cooperation with the Pan American Health Organization (PAHO), by strengthening surveillance, outbreak investigation and response, routine immunization and implementation of vaccination strategies, and epidemiological and laboratory capabilities
- Implementing the Global Measles Strategic Plan (2001–2005) with partners for measles-related mortality reduction and regional elimination of the disease and collaborating with WHO and UNICEF to develop the 2006–2010 Strategic Plan
- Building epidemiologic and laboratory surveillance capability
- Evaluating vaccination strategies for elimination, mortality reduction, and accelerated control
- Promoting injection safety and development of new injection tools
- Increasing the capacity of ministries of health to evaluate supplementary immunization campaigns
- Conducting research to determine the impact and cost-effectiveness of linking the delivery of immunizations with other public health interventions such as bednets to prevent malaria and follow-up services of infants born to HIV-infected mothers.

Mexico *— NIP's Ismael Ortega-Sanchez conducts an Economic and Prevention Effectiveness Training on Rubella and CRS in Mexico City. NIP is in a research collaboration with the Mexican Department of Health as partners in the goal of eliminating Rubella and CRS in the Americas*

**Pan American Health Organization, December 31, 2005*

MEASLES SUCCESS STORY

Africa

A dramatic drop in measles deaths in Africa has punctuated the success of immunization efforts on that continent.

Measles strikes hardest against the most vulnerable children—especially the malnourished and infants. Of all regions, Africa has had the largest burden of measles deaths, with an estimated 519,000 deaths in 1999. But the rate of mortality from measles has been declining sharply—and rapidly. From 1999 to 2004, measles deaths fell 60% in Africa, an indication that measles mortality reduction efforts are actually proceeding ahead of schedule.

The support of the Measles Initiative, which has helped implement large-scale immunization campaigns in Africa, has been an important factor in this decline. The goal of the five-year initiative (2001–2005) is to reduce global measles deaths by 50% by the end of 2005, compared to 1999 figures.

60% reduction

The Centers for Disease Control and Prevention, the American Red Cross, the United Nations Foundation, the World Health Organization, and UNICEF are all founding members of the Measles Initiative. Other key partners in the initiative include the International Federation of Red Cross and Red Crescent Societies, the Gates Foundation, the Canadian International Development Agency, and countries affected by measles.

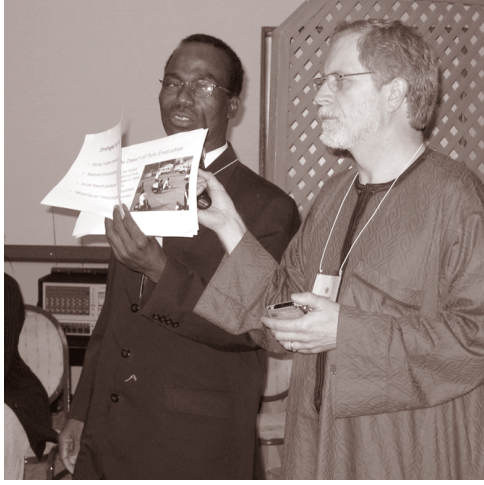
INTEGRATING HEALTH INTERVENTIONS TO SAVE ADDITIONAL LIVES

IMMUNIZATION CAMPAIGNS provide the perfect opportunity to deliver additional health interventions—such as insecticide-treated bed nets (ITNs) to prevent malaria—because health workers access nearly all of a country's mothers and young children during a campaign. While integrated campaigns have been piloted in parts of Ghana and Zambia in the past, the West African nation of Togo implemented the first nationwide integrated health campaign in mid-December 2004 with the support of the Measles Initiative. A post-campaign evaluation revealed that more than 90% of eligible children received measles and polio vaccines, de-worming medicine, and ITNs. The campaign proved that multiple interventions can be delivered successfully during an immunization campaign. The integrated strategy has the potential to save thousands of additional lives and saves governments money by combining interventions to the same target group. Integrated campaigns are planned in at least nine countries in 2006, including Indonesia, Ghana, Kenya, and Angola.

STRENGTHENING CHILDHOOD IMMUNIZATION

MORE THAN TWO MILLION PEOPLE—mostly children—die each year from vaccine-preventable diseases such as measles, Hib, pertussis, and neonatal tetanus. One of the primary strategies for reducing these deaths, as well as for achieving polio eradication, is to improve routine immunization coverage in countries where this is low. Since 2004, CDC has worked with WHO, UNICEF, and ministries of health in high risk districts in priority countries to improve routine immunization coverage. The Strengthening Childhood Immunization Team at NIP works with these partners to help assess the feasibility of integrating the delivery of additional health interventions—such as the prevention of mother-to-child HIV transmission and the distribution of bed nets for malaria prevention—with routine immunization in Kenya, Malawi, and Zimbabwe.

The team also works with partners on operations research projects to test strategies for improving routine immunization in India, Kenya, and Burkina Faso. The Kenya and Burkina Faso projects have shown significant increase in routine immunization coverage in the intervention districts. For example, 5,000 additional children were vaccinated against measles per year in the three pilot districts in Kenya than prior to the intervention, an increase of 54.1%, and in Burkina Faso, there was a 21% increase in the number of children vaccinated against measles in the three pilot districts. The improved coverage is attributed to supportive supervision and using data for program planning and program feedback. These countries plan to expand the use of these strategies to boost routine immunization rates nationwide.



TOP: ***Nigeria*** — *Dr. Steve Wasilak conducts a polio training class*

CENTER: ***India*** — *Young polio patients enjoy a visit from Dr. Steve McLaughlin*

BOTTOM: ***Kyrgyzstan*** — *Dr. John Moran reviews a laboratory log book with the head of the bacterial lab during a Hib Initiative visit*